



District Three Design Newsletter

(Internet Address - <http://www11.myflorida.com/rddesign/D-3/files/d3.htm>)

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Inside this issue:

<i>From the Editors Desk</i>	1
<i>Design Spotlight: Keith Shores</i>	2
<i>New Faces; New Places</i>	2
<i>Supplemental Agreement Report—March</i>	3
<i>Supplemental Agreement Report—April</i>	3
<i>Supplemental Agreement Report— May</i>	4
<i>First Impressions</i>	5
<i>Quality Control Plan</i>	7

From the Editor's Desk

Larry Kelley, P.E., District Design Engineer



Congratulations to everyone involved in the production efforts in the District. District 3 met all production goals this fiscal year. In fact, you exceeded goals since you also delivered the Economic Stimulus Package which was an "add on" to an already aggressive goal. I appreciate your hard work and perseverance in meeting production goals.

We are releasing a revised Quality Control (QC) Plan with this issue of our newsletter. This plan basically determines how we will do business inside DOT. However, it also mentions consultant QC and our Quality Assurance (QA) initiatives. As you review our new plan you can see that it is written with an emphasis on consultants' independence concerning plans quality. As we move toward "full service" contracts for the entire 3R program, a consultant's QC plan will be more important than ever. We do not intend to dictate a QC plan for a project. We will only insist that the consultant QC plan address certain areas. As a QA measure, we intend to review the consultants' practices and processes somewhere between the 30% and 60% plans stage. This will be done in the form of an unannounced visit or conference to review the consultant's practices versus the Project Quality Control Plan (PQCP) submitted by the consultant.

Please read the plan carefully, especially the text that applies to consultants. Mr. Hal Gore, Jr. will act as our QA Manager.

Concerning the 3R program, Mr. Jason Peters has recently been given the go ahead for the entire 02/03 3R program to be developed as full service contracts. Anything not included in the contract will be the exception rather than the rule. Jason has developed guidelines that describe the process we all will follow throughout the life of a 3R design project. This process states that DOT will do no plans reviews for 3R projects. Rather, there will be reports submitted that document communications and checklists will be required from various phase reviews. At the 60% stage, we will require a presentation by the consultant to show that the project is including all scope requirements and is on track to a quality end product.

We are not perfect and we solicit feedback on these new issues. Everyone should always feel welcome to visit with me or to send e-mail to critique these new processes and offer suggestions.

Welcome to the Future!

If you really do put a small value upon yourself, rest assured that the world will not raise your price.

Anonymous



Design Spotlight; Keith Shores

Larry Kelley, P.E., District Design Engineer

The Spotlight this quarter is on Keith Shores. Keith is a rather quiet but hard worker and we are very lucky to have him in the Design Department. He has brought added expertise to this Department and along with that an increased comfort level concerning all structural issues. Keith has very strong personal convictions which enhance his value to the Department and enable him to build quality relationships.

Keith was born in Pensacola, Florida in 1966 and moved to Chipley in 1980 when his father Billy Shores, a former D.O. T. employee, had the opportunity to move back to his home town. Keith graduated from Vernon High School in 1984, Chipola Junior College in 1986 and the University of Florida in 1989 with a Bachelor's Degree in Civil Engineering. He started his career with the D.O.T. on September 1, 1989 as Professional Engineer Trainee and worked in Structures Design. Keith became a Registered Professional Engineer in 1994 and had an opportunity to become the District Specifications Engineer in the District Construction Office. He was presented with another opportunity recently and as of March of this year, Keith is serving as the District Structures Design Engineer.

Keith likes to spend his free time outdoors, where he enjoys hunting deer and turkey, working in the garden and riding on his tractor. Also, Keith and his wife, Jana, are proud parents of their 6 month old daughter, Krista Marie Shores.

"I enjoy working with the D.O.T. and take pride in knowing that the Department is one of the leaders among other states. I believe that this status is the result of looking for better ways of doing business and in the providing of the end product to the traveling public. We've certainly seen a lot of changes in the Department and sometimes it seems things are changing on a daily basis. Just remember that change is good and change is inevitable. Through these changes we must still pay attention to quality. Quality is

Quality is

- Doing the right things right.
- A fulfillment of expectation.
- Everyone's responsibility!
- Exceeding the customer's product or service expectations by delighting them.
- Peace of Mind
- In the eyes of the beholder. In a business environment, the beholder is always the customer or client. In other words, quality is whatever the customer says it is.
- Not achieved by doing different things. It is achieved by doing things differently."

New Faces in New Places!

Eddie Register, D3 Design Newsletter

Mr. Doug Carlisle recently transferred to the D3 Design Drainage Department. Some of Doug's primary duties will include driveway and drainage permits. He has been with DOT for 9 years, starting with Crestview construction as an inspector; working there for 2 years. He then transferred to Traffic Operations where he has spent the last seven years.



Quint Williams



Doug Carlisle

Mr. Quint Williams has recently transferred to D3 Design Project Management. Quinton is transferring from the In-house Design Section and will be in a transition period over the next few weeks. His knowledge of roadway design, the plans preparation process, and understanding of the latest CADD techniques/technology will prove to be very valuable.

Supplemental Agreement Report—March

Larry Kelley, P.E., District Design Engineer

This is the Supplemental Agreement Report for the month of March 2002. The two (2) categories of supplemental agreements that are included in this monthly report are codes 101 and 107. This report is included in the Quarterly Design Newsletter as a tool to inform designers of errors and omissions that can lead to Supplemental Agreements and unnecessary costs to the public.

Below is a description of those areas and our responses:

Description Code 101: Necessary pay item(s) not included.

FPID: 222831-1-52-01 (Washington County)

Reason: Improvements under this contract consisted of milling and resurfacing, drainage improvements and signing and pavement markings on SR 8 (I-10).

A review of the plans by the Department and the Contractor revealed that sign nos. 1, 2, 3, 4, 5 EB and 5 WB were larger than 10 m2. However, the required pay item for this size sign was not included in the contract.

Increase = \$8,650.40

Response: This supplemental agreement is the result of a design error. However, there was no premium cost incurred.

FPID: 405935-1-52-01 (Washington County)

Reason: Improvements under this contract consisted of milling and resurfacing, safety and drainage improvements, fencing and signing and pavement markings on SR 8 (I-10).

A review of the plans by the Department and the Contractor revealed that four (4) signs were listed under incorrect pay items. Actual square footage of the signs was larger than the pay items to which they were included under. Therefore, the pay item for the larger signs had to be provided. Also, a review of the Summary of Pay Items in the plans called for the removal of a total of eleven (11) existing signs, but the correct total was ten (10).

Increase = \$6,309.00

Response: This supplemental agreement is the result of a design error. However, there was no premium cost incurred.

Description Code 107: Modification of approved MOT plan to accommodate various modes of transportation (i.e. peds, boats, cars, bikes, etc.).

FPID: 218774-1-52-01 (Franklin County)

Reason: Improvements under this contract consisted of widening, shoulder improvements,

drainage improvements and resurfacing along SR 30 (US 98).

A review of the contract documents revealed there were no provisions in the plans to provide for the safety and protection of the traveling public and construction workers during the modification of box culvert headwalls and construction of permanent barrier walls at station 143+14.

Due to the close proximity of the new permanent barrier wall to the edge of pavement there would be unsafe working conditions. Because no provisions were allowed for this work, additional pay items for temporary barrier wall, crash impact attenuators and steady burning lights had to be established.

Increase = \$18,335.86

Response: This supplemental agreement is the result of a design error. However, there was no premium cost incurred.

Supplemental Agreement Report—April

Larry Kelley, P.E., District Design Engineer

This is the Supplemental Agreement Report for the month of April 2002. The two (2) categories of supplemental agreements that are included in this monthly report are codes 112 and 503. This report is included in the Quarterly Design Newsletter as a tool to inform designers of errors and omissions that can lead to Supplemental Agreements and unnecessary costs to the public.

Below is a description of those areas and our responses:

Description Code 112: Project phasing or plans components not constructible as shown.

FPID: 218645-1-52-01 (Escambia County)

Reason: Improvements under this contract consist of the construction of a new bridge over Carpenter's Creek on SR 291 (Davis Hwy.).

A field review was conducted and the determination was made that additional sheet piling would be required at the Phase I abutments. The Engineer of Record reviewed the site and also agreed that the sheet pile wall was necessary. This action was taken in order to retain fill under the newly constructed approach slabs. The project plans did not provide for the retention of the fill under the Phase I approach slabs during the

(Continued from page 3)

construction of the Phase II abutments.

Increase = \$12,451.52

Response: This supplemental agreement is the result of a design error. However, there was no premium cost incurred.

FPID: 219780-1-52-01 (Leon County)

Reason: Improvements under this contract consist of the realignment of SR 371 (Orange Ave.) to form a new intersection with SR 263 (Capital Circle) thereby, making Orange Avenue a T intersection with Capital Circle and Capital Circle the continuous route.

Subsequent to commencement of construction, a review of the contract plans and actual site conditions revealed discrepancies in the Maintenance of Traffic phasing for project construction. It was determined by the Department that revisions to the MOT phasing would be required in order to facilitate project construction. This was brought to the attention of the designer who in turn performed the necessary plan revisions. These revisions include the utilization of asphalt overbuild in certain areas and the construction of a temporary detour that will allow the new roadways (SR 263 & SR 371) to be constructed one lane at a time. This action was necessary for project construction and will lessen the inconvenience to the motorist.

Increase = \$192,544.61

Response: This supplemental agreement is the result of a design error. Tallahassee Construction assessed that all the cost involved was premium, but that is probably not the case as there would be cost associated with the work even if it had been provided this way originally in the plans. If after further review by the Project Manager, Construction and the Designer it is determined that it was a designer error and a legitimate figure can be placed on the premium incurred, it may be pursued if the amount is \$10,000 or more.

Description Code 503: Change resulting from engineering decision (use specific code when possible).

FPID: 219782-1-52-01 (Leon County)

Reason: Improvements under this contract consisted of the construction of a new roadway around the south side of the FSU football stadium, retention pond construction and signing and pavement markings.

During construction operations of the retention pond adjacent to Pepper Drive, the surface of Pepper drive was damaged by the Contractor's equipment. Subsequently, the Department

directed the Contractor to repair the surface to its original condition.

The Department and the Contractor were unable to reach an agreement for the cost of the repairs therefore the Contractor requested the Disputes Review Board review the issue. The Review Board evaluated the issue and made the recommendation for the Department to compensate the Contractor for the direct cost associated with the repairs to Pepper Drive.

Increase = \$1,786.27

Response: This supplemental agreement was not the result of a design error.

Supplemental Agreement Report—May

Larry Kelley, P.E., District Design Engineer

This is the Supplemental Agreement Report for the month of May 2002. The two (2) categories of supplemental agreements that are included in this monthly report are codes 105 and 112. This report is included in the Quarterly Design Newsletter as a tool to inform designers of errors and omissions that can lead to Supplemental Agreements and unnecessary costs to the public.

Below is a description of those areas and our responses:

Description Code 105: Conflicts resulting from discrepancies, inconsistencies, etc. between plans notes, details, pay items, standard indexes or specifications.

FPID: 220433-1-52-01 (Santa Rosa County)

Reason: Improvements under this contract consisted of milling and resurfacing and the construction of 1.52 m (5') paved shoulders on US 90 in Santa Rosa County.

When the paved shoulders and sod strip 0.76 m (30") wide and the remaining shoulder (2.44 m, 8' width total) were constructed on the 0.06 cross slope, the front slope was approximately an average of 0.1 m too high. This required grading, removal, disposal and dressing of the front slopes out through the clear zone on a 1:4 or flatter slope.

Increase = \$16,343.60

Response: This supplemental agreement is the result of a design error. However, there was no premium cost incurred. The typical section for this area showed the reconstruction of the front slopes and reconstruction of ditches if necessary, but there was no provisions provided in the plans for the excavation, grading or grassing of this area in the

(Continued from page 4)

summary of quantities.

Description Code 112: Project phasing or plans components not constructible as shown.

FPID: 218523-1-52-01 (Escambia County)

Reason: Improvements under this contract consisted of the construction of new bridges over the railroad tracks on SR 295 (Navy Blvd.) in Escambia County.

The plans called for the relocation of the temporary barrier wall from the phase I detour to the phase II detour. However, traffic must still be maintained on the phase I detour during the placement of the barrier wall for the phase II detour, therefore relocation of that barrier wall was not possible. A new pay item for Barrier Wall (Temporary) (F & I) (Concrete) 2102-70-11A was added.

Increase = \$15,734.00

Response: This supplemental agreement is the result of a design error. However, there was no premium cost incurred.

First Impressions

Jason Peters, P.E., District Project Management Engineer

Public Involvement is ever becoming more and more a vital part of our business. The impacts that a particular roadway project has on a community and its citizens should be a factor in determining the most feasible design. This concept begins with impressions. Usually the overall success of any challenge in life begins with first impressions. Many times the opinion a community has of a project is determined when the community is contacted by the Department for the first time. A community will meet Department personnel for the first time when citizens receive notices of the first public involvement meeting. First Impression! Think about it, what if some outside organization came into your community to provide community enhancements only to find out that the organization did not know who the local officials were, the local community organizations, or the local street names. What would be your impression? Would you be confident that this organization is concerned about your community?

With more and more privatization of the transportation program, the Department's first impression usually begins with you. As per request by the Department, one of the services that a consultant is required to provide is public involvement and mailing personal letters to the community officials. Over the past year the Department has had to return many mail-outs to consultants because of wrong project limits, wrong street names, wrong person, or to someone that is no longer a public official. "Impressions!" Had someone from the Department not critique these packages, I wonder what the Department's first impression would have been. Think about Quality Control. What does this say about an organization's Quality Control? When incorrect letters and mail-outs are sent to the Department, how does the Department view a consultant's Quality Control?

With all that said, this article is intended to reiterate the need to develop a better understanding of a community and develop a more personal relationship with the community in efforts to provide a positive atmosphere where the community will feel a part of the project, thus, everyone works together not against each other. Some ways that we can achieve this is by ensuring that our public information notices are professional, accurate, submitted to the proper people, and of a personal nature.

The Department would like to provide a few general comments on Notices to Public Meetings:

NOTICE OF MEETING WITH A MAP SHOULD GO TO.....

- Property owners are required by law to be contacted concerning Public Meetings
- Major traffic generators in the area of the project (malls, hospitals, college, etc.)
- Key local government positions not covered in the public officials list for the District Design Engineers signature:

examples are:

-Planning Council Director

-School Transportation Director

-Public Works Director

-Fire Chief

(Continued from page 5)

- | | |
|----------------------|-----------------------------------|
| -Chief of Police | -District Secretary and Directors |
| -Chamber of Commerce | -Seaport Authority |
| -Airport Authority | -County/City Manager |
- Known Interest Groups
 - All Department Heads and the District Public Information Officer

LIST OF PERSONAL LETTERS TO BE SIGNED BY THE DISTRICT DESIGN ENGINEER

- | | |
|--|-------------------------------|
| -US/State Senators | -Property Appraiser |
| -US/State Representative | -School Superintendent |
| -County Commissioners | -County Sheriff |
| -MPO Chairman (if not a commissioner) | -County Engineer |
| -County Emergency Manager | -Bridge Authority Chairperson |
| -Supervisor of Elections | -Tax Collector |

Employees of these offices should not receive a notice or letter. This is a community project involving people in a confined area, not a statewide project.

Always include the local road names as well as the state road number. The limits and type of work should be clearly defined. Review letters and notices to ensure accuracy, names are spelled correctly, and letters are sent to the person currently holding the public official positions.

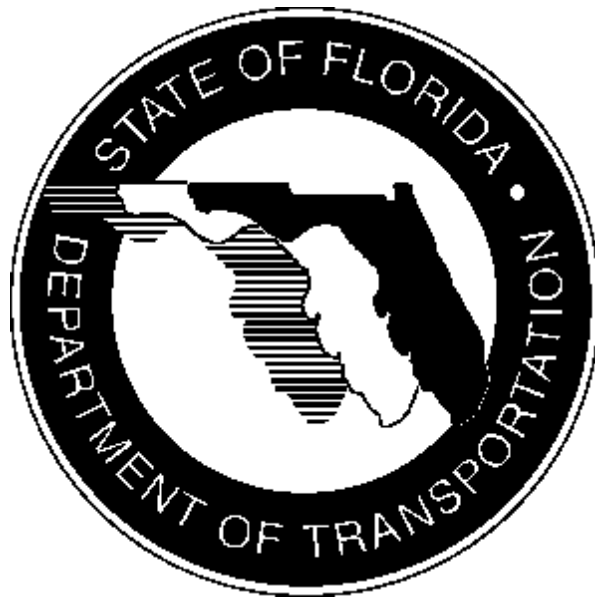
In the letters for the District Design Engineer's signature, include:

- The meeting format
- Schedule of the project
- Funding
- Length of construction, etc.
- Attach a copy of the information sent to the property owners

DISTRICT THREE DESIGN
FLORIDA DEPARTMENT OF
TRANSPORTATION

If you have any questions or problems regarding obtaining a copy of this newsletter from the web page, contact Eddie Register in the District Utilities Office at (850) 638-0250 ext.—392

QUALITY CONTROL PLAN FOR DISTRICT THREE DESIGN



**FLORIDA DEPARTMENT OF TRANSPORTATION
CHIPLEY, FLORIDA**

JUNE 2002 (Revised)

TABLE OF CONTENTS

1.0 INTRODUCTION

- 1.1 Requirements for Quality Control
- 1.2 Purpose
- 1.3 Definition of Terms

2.0 PROJECT QUALITY CONTROL REQUIREMENTS

3.0 ORGANIZATION

- 3.1 Quality Control Staff

4.0 QUALITY CONTROL REVIEWS

- 4.1 General
- 4.2 Checking Procedures
 - 4.2.1 Checking Reports
 - 4.2.2 Checking Drawings
 - 4.2.3 Checking Calculations
 - 4.2.4 Checking Correspondence
- 4.3 Resolution of Disputes

5.0 METHOD OF DOCUMENTATION OF COMMENTS, COORDINATION, RESPONSES AND QUALITY ASSURANCE RECORDS

- 5.1 Documentation of Comments, Coordination and Responses
- 5.2 Quality Assurance Records

6.0 QUALITY ASSURANCE

- 6.1 General
- 6.2 Frequency of QA Reviews and Reports
- 6.3 QA of Consultants Projects
- 6.4 FDOT Reviews of Consultant Designs

1.0 INTRODUCTION

1.1 REQUIREMENTS FOR QUALITY CONTROL

Quality Control (and Quality Assurance) is the process used to ensure the public receives a quality product.

QUALITY CONTROL is the process performed to ensure conformance with valid requirements. This process includes quality planning, training, providing clear decisions and directions, constant supervision, immediate review of completed activities for accuracy and completeness, and documenting all decisions, assumptions and recommendations.

Each District shall have a **District Quality Control Plan** for Roadway Design and the other production units which address a broad overall quality initiative. The **District Quality Control Plan** shall identify the organization, responsibility, and accountability used to perform and document overall quality control, including the requirement for a Project Quality Control Plan on all projects. All **Project Quality Control Plans** must address any project specific Scope of Service needs and be approved by the DOT Project Manager for consultant projects or the Quality Assurance Manager for in-house projects.

In-house and Consultant designers and reviewers must recognize that quality is the result of several processes. It requires many individuals performing many appropriate activities at the right time during the plans development process. Quality Control does not solely consist of a review after a product is completed. It is an approach and a realization that Quality is something that occurs throughout the Design process. Quality requires performing all activities in conformance with valid requirements, no matter how large or small their overall contribution to the design process. Good CADD techniques, attention to details and ensuring the plans are correct and useful to the contractor are also essential to quality.

Florida Statute 20.23(4)(b) requires a **Quality Control Process**. It requires that each District shall be accountable for ensuring their District's quality of performance and compliance with all laws, rules, policies, and procedures related to the operation of the Department.

The **DISTRICT** shall follow established design polices, procedures, standards and guidelines in the preparation and review of all design products; and review Consultant prepared individual engineering and design for compliance with policies, standards, procedures and good engineering practice (DOT review may be limited for certain "full service" consultant contracts).

The **CONSULTANT** is an agent for the District with the primary responsibility for preparation of contract plans. Consultants must *ensure quality* and adherence to established design policies, procedures, standards and guidelines in the preparation and review of all design products for compliance and good engineering practice as directed by a **Project Quality Control Plan**.

The District shall monitor the Quality Control efforts used by in-house staff and its consultant services units. The District shall assure project scopes include an adequate **Project Quality Control Plan**.

The Districts shall maintain a file containing the current District Quality Control Plan and shall furnish Central Office Design with a copy to be used as part of the critical areas to be reviewed. **Every project file will contain a Project Quality Control Plan at the beginning of the Initial Engineering Design Process.**

The District shall identify and coordinate training needs of in-house and Consultant services through the appropriate Central Office units.

1.2 PURPOSE

The main objective of the Quality Control Plan for design projects is to provide a mechanism by which all products of the District Design Office can be subject to a systematic and consistent review. The outcome of the review should create a set of quality project plans, which should be substantially error free.

A secondary objective of the Quality Control Plan is to provide for a well documented "trail" of the design process. A properly documented project file should be a by-product of the quality control process. The Department, as a whole, should be able to substantiate its position from properly documented project files if any legal, social or procedural issues arise regarding the project.

Another secondary objective of the Quality Control Plan is to provide information feedback from reviews that should increase awareness of the design units. Designer's improved expertise and general increase in knowledge from feedback should result in product improvement at early stages even before a project review is started. The Quality Control Plan thus serves as a parallel training program.

It is not the intent of this plan to supersede the Roadway Plans Preparation Manual or any other manuals, policies or standards of the Department. This plan will be reviewed and updated periodically to ensure compliance with changes to plans preparation requirements, processes and organizational structure.

1.3 DEFINITION OF TERMS: The use of the terms Quality Control, Quality Assurance, and Project Quality Control Plan within this document will be understood to have the following meanings:

Quality Control (QC)

Quality Control refers to those actions, procedures, and methods that are routinely employed at the production and administrative levels, and under the jurisdiction of the Engineer of Record (EOR), to produce the desired result of a quality product.

Quality Assurance (QA)

Quality Assurance refers to those actions, procedures, and methods employed at the management and senior technical levels to observe and see that prudent quality procedures are in place and are being carried out and that the desired result of a quality product is achieved.

Project Quality Control Plan (PQCP)

The project Quality Control Plan defines and outlines specific actions and procedures to be used to achieve the project goal. This plan also delineates who is responsible for these actions and when they should occur. Interfaces and points of coordination are defined and specific responsibilities are clearly set forth.

Quality Assurance Certification

Refers to a signed statement by a management level Engineer certifying that a written, pre-approved Project Quality Control Plan is in place and has been adhered to.

2.0 PROJECT QUALITY CONTROL REQUIREMENTS

A **Project Quality Control Plan (PQCP)** is required for each project prior to beginning design.

The Project Quality Control Plan: This details the proposed methods or process of providing quality control for all work products. This plan will be kept current with the work requirements. The plan shall include, but is not limited to, the following areas:

- Organization
- Quality Control Reviews
- Proposed method of documentation of comments, coordination responses and quality assurance records.
- Quality Assurance Certification

A Project Quality Control Plan is to be developed by the EOR and submitted to the Quality Assurance Manager for approval.

Any modification to the elements of this overall document in the PQCP shall be justified and approved by the QA manager.

3.0 ORGANIZATION

3.1 Quality Control Management Staff

The EOR has primary management responsibility for Quality Control and for development and implementation of the Project Quality Control Plan (PQCP). At the time of starting the QC process for any project element, the EOR in coordination with the Assistant District Design Engineer must identify the QC person or team required to review that particular element. This QC person or team must complete the QC process of his/their elements and confirm with the original designer. The following describes in more details the duties and responsibilities of the major participants:

Engineer of Record (EOR): Allocates resources to various elements of the work, establishes and implements the

PQCP, schedules the various activities and adjusts plans as the work progresses to identify potential problem areas and resolve them in a timely manner. Responsible for technical review and approval of project documents; identifies the Quality Control personnel required for each review; and maintains frequent contact and communication with other Departments within DOT, local governments, other state agencies and the general public. The EOR directs technical staff and assigns quality control functions.

Designer: An experienced staff engineer working under the supervision of the EOR responsible for various roadway design activities and quality control activities as assigned by the EOR.

Senior Technical Advisors: These advisors are senior technical staff with extensive experience in their respective areas of expertise. These individuals review the basic concepts and design criteria in the initial stages of project development so that all subsequent work will proceed based on the proper assumptions. They review the work for sound engineering, feasibility, constructability, conformance to professional engineering standards and practices, and compliance to project standards.

Checkers: Peer level engineers or technicians who review the details of reports, drawings and/or calculations. Checkers are those not actively involved in the preparation of the product being reviewed.

Quality Assurance Manager (Assistant District Design Engineer for In-house Design): An engineer or manager with general experience in the area of roadway design, whose primary responsibility is to approve the initial Project Quality Control Plan and periodically performs unannounced QA reviews to ensure the plan is being adhered to, and to document deficiencies and recommend improvements to the Project Manager, Engineer of Record or the District Design Engineer, as appropriate.

4.0 QUALITY CONTROL REVIEWS

4.1 General

Every product will undergo a quality control review. The reviewer will be an experienced engineer *who was not actively involved in the preparation of the product.* Checking procedures for these quality control reviews are discussed in Sections below.

Also, note that there is an overlap among reports, calculations and plans. Most reports and calculations are incorporated into the plans. Check should be made to ensure that calculations/reports are correctly incorporated into the plans.

4.2 Checking Procedures

4.2.1 Checking of Reports

The first step in the production of a report is the preparation of an outline. This outline is then submitted to the appropriate Assistant District Design Engineer for his approval. This early review of the outline improves the efficiency of report writing because it:

- Prevents duplication and overlap
- Helps to keep the focus on major issues
- Maintains consistency of format and structure

Once the report writing has progressed to an appropriate stage of development, a draft is assembled and sent to the reviewer(s), one of which is the Project Manager. The reviewers will be given a specific and reasonable deadline for completing their reviews. Review times are based on the PQCP.

Review comments/corrections are marked on the review draft in red. Upon completion of the review, the reviewer signs and dates the cover page of the draft and returns the draft to its originator.

The originator then confirms or revises the corrections and comments, adds his/her own corrections/comments, and consults with the appropriate person(s) to resolve any conflicts. The originator then makes the corrections to the text. The

marked-up draft is placed in the project files after the document is finalized.

4.2.2 **Checking of Drawings**

Drawings are prepared under the direction of an assigned Designer. They are developed progressively by an iterative process using sources of information such as survey data, reports, record data, preliminary sketches, samples, official maps, etc, in conformance with the requirements, design criteria, and standards and guidelines required by FDOT. Before a drawing is considered final, it will be independently checked for:

- Conformance with the design criteria, project requirements including graphic standards (CADD Standards)
- Completeness and clarity
- Coordination with other aspects of the project, i.e., structural, civil, traffic, right-of-way, etc., and with other associated project documents
- Compatibility standards and good plans preparation practice
- Coordination with project elements being developed or planned development on adjacent projects

The first formal issue of a drawing is the check print, which is routed to the assigned checker (s). Additional copies of check prints may be routed for internal design review to engineers in departments with interfacing project responsibilities. All drawings will have check print issues.

Checkers will review a drawing to determine if it meets the objectives of the task and is complete, accurate, and suitable for the intended use. All items must be marked by the checker to indicate either his/her agreement or disagreement.

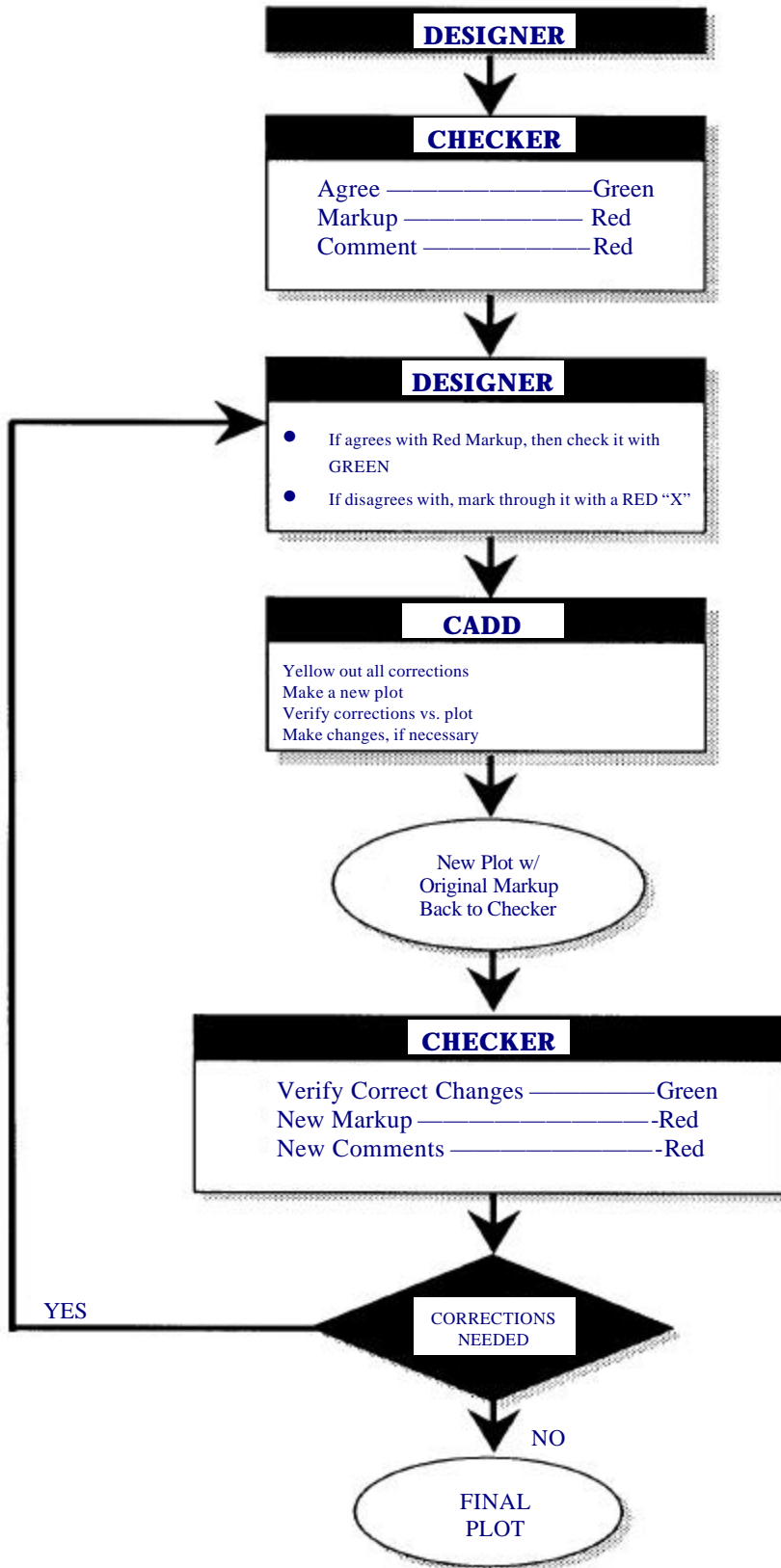
- GREEN: Checker agrees with drawing
- RED: Area requiring correction, with appropriate comments noted by the checker adjacent to the area

The Designer then inspects the check print, confirms or revises the corrections and comments, adds his/her own corrections/comments, consolidates and coordinates comments from different checkers, and consults with the checker and other appropriate person(s) to resolve any conflicts. When all comments are compiled and all conflicts are resolved, the designer then routes the check print to the appropriate CADD operator, who will then make the corrections to the CADD files.

Once the CADD operator makes corrections from the compiled check print to the original CADD files, he/she will **highlight** the corrections in **yellow**. When completed, the CADD operator will plot a revised check print. Both the original and revised check prints are then returned to the checker.

The checker then back checks the revised check print against the original check print. When the checker is satisfied that all comments/corrections have been incorporated into the drawing, he/she forwards the original and revised check prints to the Designer for his/her review. **However, if the checker has new comments, the drawing is returned to the designer and the process is repeated.** The checker shall initial the revised check print to verify that corrections have been made.

QC PROCESS



**Designers will need to discuss first with checkers*

**CADD to ensure conformance to CADD standards*

4.2.3 Checking Calculations

Manual calculations will be prepared in pencil. A calculation may also include other forms, charts, graphs, data sheets, computer printout, etc. The Designer signs and dates each computation sheet as it is completed.

Assumptions, upon which calculations are based, shall be stated in the calculations. Assumptions with limited application should immediately precede the calculations to which they apply.

Calculations issued for approval or support drawings or other work issued for approval will be checked. No Designer will check his or her own work. The checker shall be experienced in the discipline being checked and have a level of knowledge and qualifications sufficient to have performed the calculation. Cursory supervisory reviews do not satisfy the intent of this section.

The Designer determines the point at which design work has progressed sufficiently that checking can begin on a completed portion of work. The designer reviews the data and the scope of the work with the assigned checker. The Designer provides the checker with design criteria, copies of pertinent information, related drawings, and related calculations, if needed.

A design check includes verification of the introductory material on the calculation sheet, as well as the calculation itself. The checker verifies that all information is appropriate, correct, complete, consistent, legible, and reproducible. To do this, the checker needs to follow a logical method to make sure that he/she has not missed verifying any data. The standard policy is to check the major items of importance first.

The checker will mark items to indicate either his/her agreement or disagreement. The following is the color code to be used for making calculations.

- GREEN: Use for agreement
- RED: Use for corrections

When satisfied, the checker will place his/her name/initials and date each original calculation sheet.

4.2.4 Checking of Correspondence

Any correspondence that is prepared for external customers shall be reviewed by an equal or higher level employee. The review shall include spelling, punctuation, grammar, sentence structure, correct address and title. The goal is accuracy, simplicity and uniformity. All correspondence shall always include the DOT FM# as well as a local name when referring to a project. When appropriate letters need to include design schedules, letting date, construction time and cost estimate.

4.3 Resolution of Disputes

During the review and checking process, if the checker does not agree with the results of the design task being checked, he will first discuss the matter with the Designer. If the difference cannot be

resolved between the checker and the Designer, a senior technical advisor will be consulted to assist in the resolution of the dispute.

5.0 METHOD OF DOCUMENTATION OF COMMENTS/RESPONSES AND QUALITY ASSURANCE RECORDS

5.1 Documentation of Comments and Responses

All comments made by external reviewers shall be recorded either by copy of memos, e-mail, letters and/or marked plans received from the reviewers. In the event that comments are received through meetings with reviewers, there shall be minutes prepared that summarize the comments received. All comments shall be responded to, by the Designer responsible for the discipline that prepared the document being reviewed. The response shall be in writing and shall be formatted in a manner that identifies the document review date, reviewer's comments and responses to the comments. All comments received shall be copied to the EOR if not first received by the EOR. All comment/response drafts shall be submitted to the EOR for his review. The EOR will be responsible for submittal of comment/responses to the reviewing entity.

Where it is necessary and/as prudent to discuss the comments with the reviewer(s) prior to making a response, the EOR shall arrange for the meeting.

Copies of all comments and responses shall be kept in a separate file contained within the Project Filing System.

5.2 EOR Quality Assurance Records

The EOR will be responsible for maintaining the Quality Control records. At any point in the design process the EOR shall make records available within a reasonable time frame to and/or meet with the Quality Assurance Manager (or designee) for any unannounced QA review.

6.0 QUALITY ASSURANCE

6.1 General

QA shall include not only periodic reviews to ensure compliance with the QC plan included in this document; it also includes review of several other established processes. The QA manager shall ensure that an appropriate level of review (and cooperativeness in review process) have occurred for:

- (a) Constructability
- (b) Bidability
- (c) Value Engineering
- (d) Project Concept Reports

QA also incorporates a general review of personnel to ensure an acceptable level of expertise is maintained for quality design products. All Design personnel shall be advised of the details of the QC plan.

Also communication is a vital element in all processes and the QA will also review documentation concerning the level and quality of communications accomplished during various processes.

At least quarterly the QA manager shall meet with customers of Design products to discuss issues, problems and shall use information to improve processes and for the QC plan annual reports. The QA manager shall perform QA reviews in an unannounced fashion. He may perform a review him-

self or delegate this duty. For consultant projects, he may direct the DOT project manager to perform the QA.

6.2 Frequency of QA Reviews and Reports

Each project shall have a QA review at some point in the design process between the 30% and 90% complete levels. Any deficiencies in adherence to the PQCP shall be documented and the QA Manager will advise the EOR (for in-house projects) or the Department and Consultant Project Manager (for consultant projects) of deficiencies. The EOR shall respond in writing as to what corrective action will be implemented. Each project shall have a brief report developed following completion of construction to document design errors identified during construction. The report shall address (when possible to conclude) whether the error was attributed to inadequate adherence to the PQCP.

On June 30th of each year, the QA Manager shall deliver to the District Design Engineer an annual QA report documenting how many and what type projects had QA performed on them (and at what phase) and the report shall include an overall summary of the effectiveness of the *District QC Plan* and recommend any changes necessary to improve quality.

6.3 QA of Consultant Projects

Consultant projects shall undergo the same QA review as in-house projects. Consultant Project Quality Control Plans shall be submitted to the DOT Project Manager in advance of any design work and shall include but not be limited to the following areas:

- Organization
- Quality Control Review of Plans, Reports, Calculations & Correspondence
- Proposed Method of Documentation of Comments, Coordination, Response and QA Records
- Control of Sub-Consultants and Vendors
- Efficiency
- Quality Assurance Certification

****CONTROL OF SUB-CONSULTANTS PROGRESS**

Strong emphasis will be placed on coordination with all of the sub-consultants throughout the project. Particular attention will be placed on critical path activities and on the sub-consultant's needs for information required for participating in these and other activities in a timely manner. Regular meetings and teleconferences will take place in order to facilitate this coordination. All sub-consultants shall be required to conform to the PQCP and provide their supplement to the PQCP where they are performing a specialized service that is not adequately addressed in the PQCP.

All submittals shall also be subject to quality assurance audits by FDOT. Problem areas shall be discussed with the sub-consultant and agreed upon remedial actions shall be taken by the sub-consultant prior to any further payment of sub-consultant invoices.

6.4 FDOT Reviews of Consultant Designs

Projects in FDOT's work program are identified for various levels of review by FDOT. Others may be identified as "no review" contracts concerning consultant services. Where any review by FDOT is performed, Consultants must not rely on FDOT as a part of their QC plan either formally or informally. Consultants are expected to follow their own QC plans and accepted engineering practices.